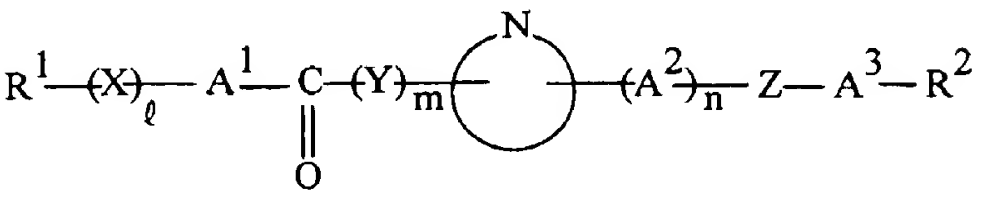
AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A compound of the formula:



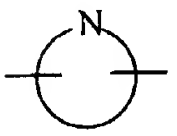
wherein R^1 is a substituted or unsubstituted N-containing cycloalkyl,

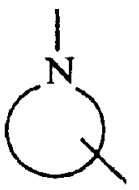
R^2 is carboxy or protected carboxy,

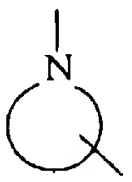
A^1 is a substituted or unsubstituted lower alkylene, a substituted or unsubstituted lower alkanyl-ylidene or a substituted or unsubstituted lower alkenylene,

A^2 is lower alkylene,

A^3 is a substituted or unsubstituted lower alkylene,

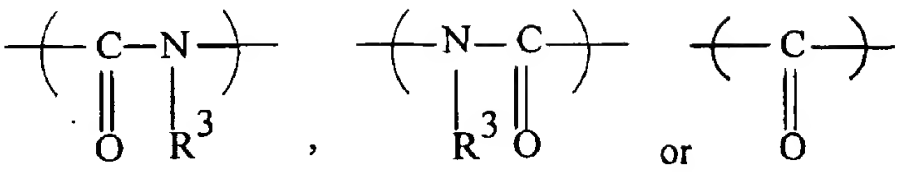
 is a group of the formula:



wherein  is a substituted or unsubstituted N-containing heterocyclic group,

X is O, S or NH,

Y is NH,

Z is  or

wherein R^3 is hydrogen or lower alkyl,

ℓ, m and n are each the same or a different integer of 0 or 1,

and a pharmaceutically acceptable salt thereof.

2. (Previously Presented) The compound of claim 1,

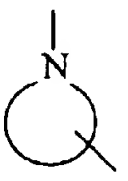
wherein R^1 is a substituted or unsubstituted 3 to 8 membered cycloalkyl containing 1 to 3 nitrogen atom(s),

R^2 is a carboxy or an esterified carboxy,

A^1 is a substituted or unsubstituted lower alkylene, a substituted or unsubstituted lower alkanyl-ylidene or a substituted or unsubstituted lower alkenylene,

A^2 is lower alkylene,

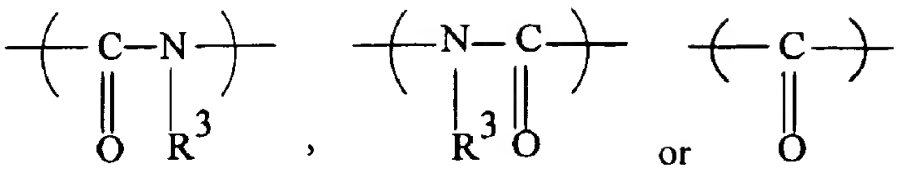
A^3 is a substituted or unsubstituted lower alkylene,



is a substituted or unsubstituted saturated 3 to 8 membered heteromonocyclic group containing 1 to 4 nitrogen atom(s), a substituted or unsubstituted unsaturated condensed heterocyclic group containing 1 to 4 nitrogen atom(s) or a substituted or unsubstituted saturated 3 to 8-membered heteromonocyclic group containing 1 to 5 carbon atom(s), 1 to 2 oxygen atom(s) and 1 to 3 nitrogen atom(s),

X is O, S, or NH,

Y is NH,

Z is  ,

wherein R^3 is hydrogen or lower alkyl;

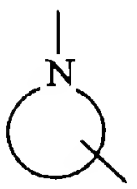
ℓ is an integer of 0 or 1,

m is an integer of 0 or 1,

n is an integer of 0 or 1.

3. (Previously Presented) The compound of claim 2,

wherein R^1 is an unsubsituted piperidyl or a substituted piperidyl containing 1 or 2 oxo or [5- (lower) alkyl-2-oxo-l,3-dioxol-4-yl](lower)alkyl,

 is piperidyl, morpholinyl, tetrahydroquinolyl or pyrrolydinyl,

A^3 is an unsubstituted lower alkylene or a substituted lower alkylene containing 1 to 3 suitable substituent(s) selected from the group consisting of $(C_1$-$C_6)$alkyl; $(C_2$-$C_6)$alkenyl; $(C_2$-$C_6)$alkynyl; phenyl; phenyl$(C_1$-$C_6)$alkyl; phenyl$(C_1$-$C_6)$alkyl having 1 to 4 $(C_1$-$C_6)$alkoxy, halo $(C_1$-$C_6)$ alkyl or $(C_1$-$C_6)$alkylene dioxy; $(C_1$-$C_6)$alkyl having unsaturated condensed heterocyclic group containing 1 to 4 nitrogen atom(s); cyano; amino; protected amino; and phenyl$(C_1$-$C_6)$alkylcarbamoyl;

R^2, R^3, A^1, A^2, X, Y or Z are each as defined in claim 2,

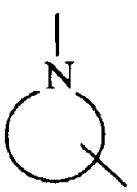
ℓ is an integer of 0,

m is an integer of 0,

n is an integer of 0.

4. (Previously Presented) The compound of claim 3,

wherein R^1 is an unsubsituted piperidyl or a substituted piperidyl containing 1 or 2 oxo or [5-(lower)alkyl-2-oxo-1,3-dioxol-4-yl](lower)alkyl,



is piperidyl, morpholinyl, tetrahydroquinolyl or pyrrolydinyl,

A^3 is an unsubstituted lower alkylene or a substituted lower alkylene containing 1 to 3 suitable substituent(s) selected from the group consisting of (C_1-C_6)alkyl; (C_2-C_6)alkenyl; (C_2-C_6)alkynyl; phenyl; phenyl(C_1-C_6)alkyl; phenyl(C_1-C_6)alkyl having 1 to 4 (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl or (C_1-C_6)alkylene dioxy; (C_1-C_6)alkyl having unsaturated condensed heterocyclic group containing 1 to 4 nitrogen atom(s); cyano; amino; (C_1-C_6)alkanoylamino; aroylamino which may have 1 to 3 hydroxy, (C_1-C_6)alkoxy, halogen or phenyl; cyclo(C_3-C_6)alkylcarbonylamino; (C_1-C_6)alkoxy(C_1-C_6)alkylcarbonylamino; (C_2-C_6)carbonylamino; (C_1-C_6)alkylsulfonylamino; phenylsulfonylamino; and phenyl(C_1-C_6)alkylcarbamoyl;

R^2, R^3, A^1, A^2, X, Y or Z are each as defined in claim 3,

ℓ is an integer of 0,

m is an integer of 0,

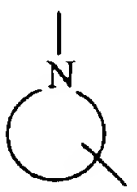
n is an integer of 0.

5. (Previously Presented) The compound of claim 4,

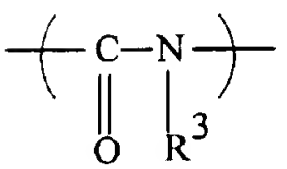
wherein R^1 is piperidyl,

A^1 is a lower alkylene or a lower alkanyl-ylidene,

A^3 is an unsubstituted lower alkylene or a substituted lower alkylene containing a lower alkyl, a lower alkynyl or a lower alkanoylamino,



is piperidyl,

Z is  ,

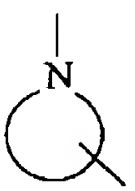
R^2, R^3, A^2, Y, ℓ, m, and n are each as defined in claim 4.

6. (Previously Presented) The compound of claim 5,

wherein R^3 is hydrogen,

A^1 is a lower alkylene,

A^3 is a lower alkylene having a lower alkanoylamino,

R^1, A^2,  , X, Y and Z are each as defined in claim 5.

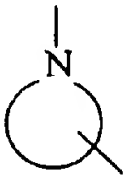
7. (Original) N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-2(S)-acetylamino-β-alanine or its hydrochloride.

8. (Previously Presented) The compound of claim 5,

wherein R^3 is hydrogen,

A^1 is a lower alkylene,

A^3 is a lower alkylene having a lower alkynyl,

R^1, R^2, A^2, 

, X, Y, Z, ℓ, m and n are each as defined in claim 5.

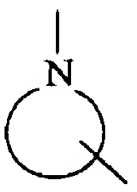
9. (Original) N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-3(S)-ethynyl-β-alanine.

10. (Previously Presented) The compound of claim 4,

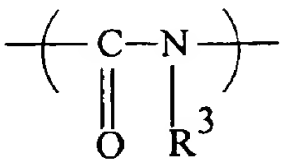
wherein R^1 is piperidyl,

A^1 is a lower alkylene or a lower alkanylylidene,

A^3 is an unsubstituted lower alkylene or a substituted lower alkylene containing a lower alkyl, a lower alkynyl or a lower alkanoylamino,



is morpholinyl,

Z is  ,

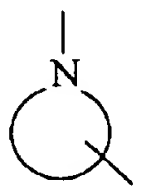
R^2, R^3, A^2, Y, ℓ, m and n are each as defined in claim 4.

11. (Original): A compound of claim 5,

wherein R^3 is hydrogen,

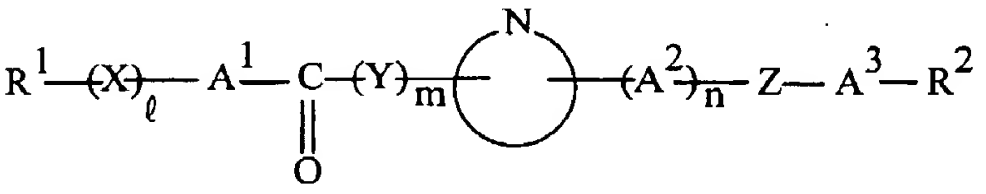
A^1 is lower alkylene,

A^3 is lower alkylene,

R^1, A^2,  , X, Y and Z are each as defined in claim 10.

12. (Original) N-[4-{3-(4-piperidyl)propionyl)-2-morpholinylcarbonyl}-β-alanine or its hydrochloride.

13. (Currently Amended) A process for preparing a compound of the formula:



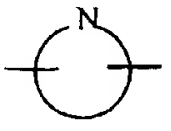
wherein R^1 is a substituted or unsubstituted N-containing cycloalkyl,

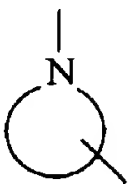
R^2 is a carboxy or a protected carboxy,

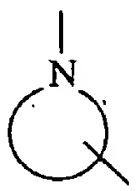
A^1 is a substituted or unsubstituted lower alkylene, a substituted or unsubstituted lower alkanyl-ylidene or a substituted or unsubstituted lower alkenylene,

A^2 is a lower alkylene,

A^3 is a substituted or unsubstituted lower alkylene,

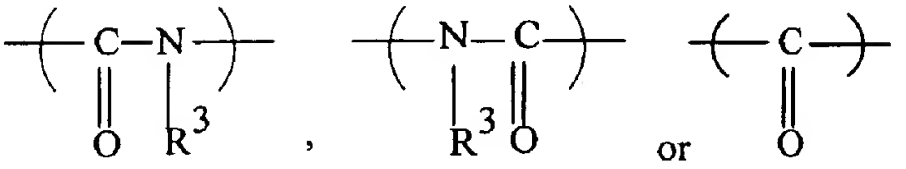
 is a group of the formula:



wherein  is a substituted or unsubstituted N-containing heterocyclic group,

X is O, S or NH,

Y is NH,

Z is 

(wherein R^3 is hydrogen or lower alkyl),

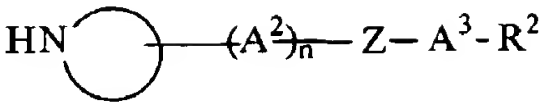
ℓ, m and n are each the same or a different integer of 0 or 1,

and a salt thereof, which comprises

(i) reacting a compound of the formula

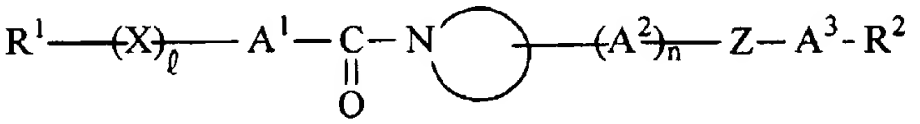
$$R^1-(X)_\ell-A^1-COOH$$

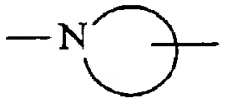
wherein R^1, A^1, X and ℓ are each as defined above, or its reactive derivative at the ~~carboy~~ carboxy group or a salt thereof, with a compound of the formula:



wherein R^2, A^2, A^3,  , Z and n are each as defined above,

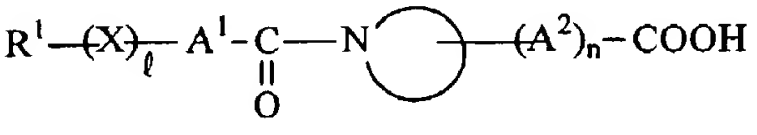
or its reactive derivative at the amino group or a salt thereof, to give a compound of the formula:

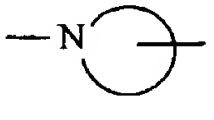


wherein R^1, R^2, A^1, A^2, A^3,  , X, Z, ℓ and n are each as defined above,

or a salt thereof, or

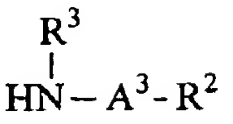
(ii) reacting a compound of the formula:



wherein R^1, A^1, A^2,  , X, ℓ and n are each as defined above,

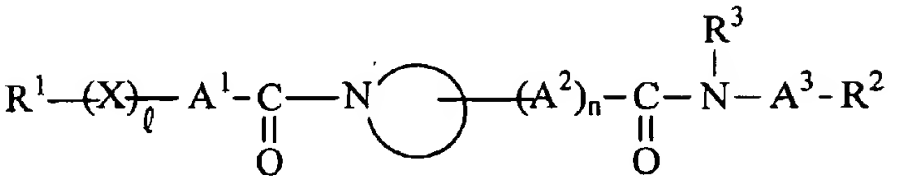
or its reactive derivative at the carboxy group

or a salt thereof, with a compound of the formula:



wherein R^2, R^3 and A^3 are each as defined above, or its reactive derivative at the amino group

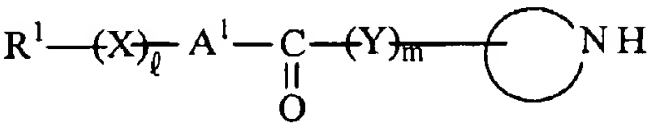
or a salt thereof, to give a compound of the formula:

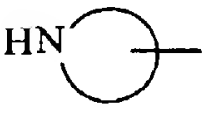


wherein R^1, R^2, R^3, A^1, A^2, A^3,  , X, ℓ and n are each as defined above,

or a salt thereof, or

(iii) reacting a compound of the formula:

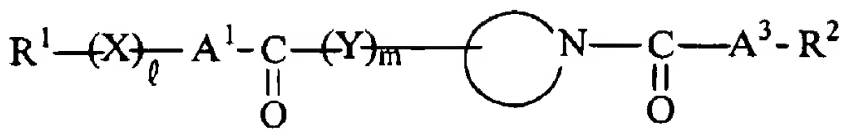


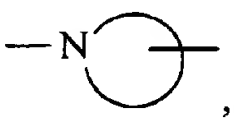
wherein R^1, A^1,  , X, Y, ℓ and m are each as defined above, or its reactive derivative at the amino group or a salt thereof, with a compound of the formula

$$R^2\text{-}A^3\text{-}COOH$$

wherein R^2 and A^3 are each as defined above,

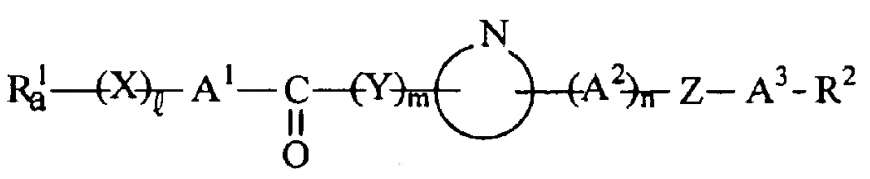
or its reactive derivative at the carboxy group or a salt thereof, to give a compound of the formula:

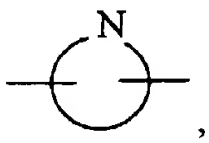


wherein R^1, R^2, A^1, A^3,  , X, Y, Q and m are each as defined above,

or a salt thereof, or

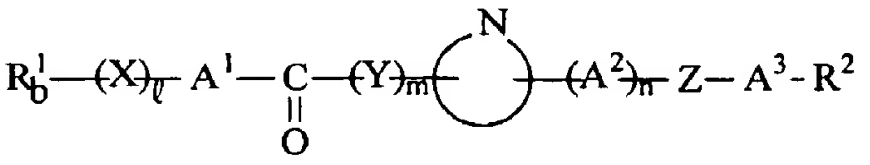
(iv) subjecting a compound of the formula:

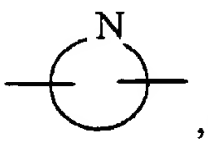


wherein R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, and

R^1_a is a substituted or unsubstituted N-containing cycloalkyl having amino protective group,

or a salt thereof, to elimination reaction of the amino protective group, to give a compound of the formula:

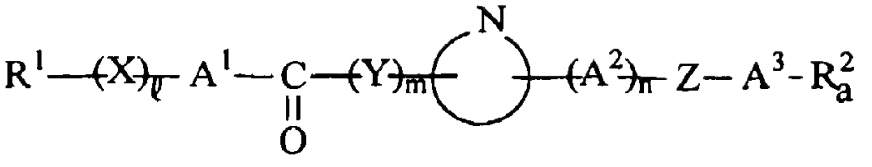


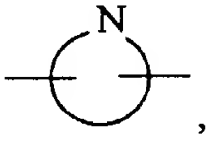
wherein R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, and

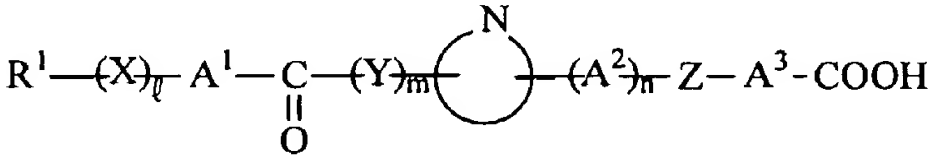
R^1_b is a substituted or unsubstituted N-containing cycloalkyl,

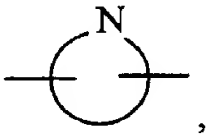
or a salt thereof, or

(v) subjecting a compound of the formula:

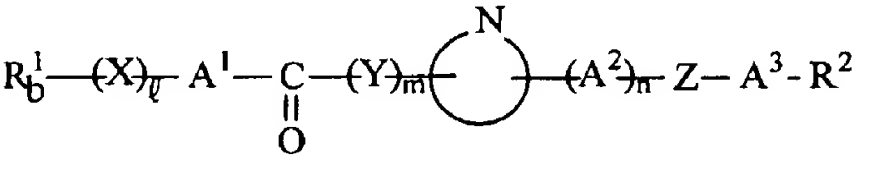


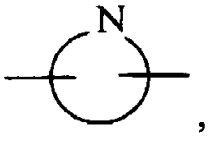
wherein R^1, A^1, A^2, A^3,  , X , Y, Z , ℓ , m and n are each as defined above, and R^2_a is protected carboxy, or a salt thereof, to elimination reaction of carboxy protective group, to give a compound of the formula:



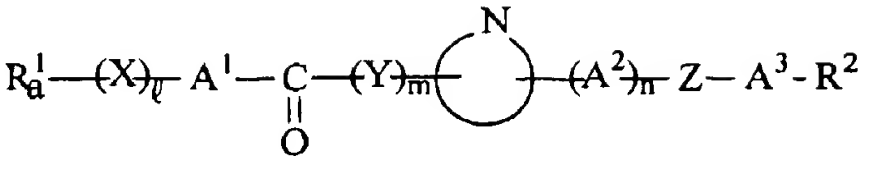
wherein R^1, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, or a salt thereof, or

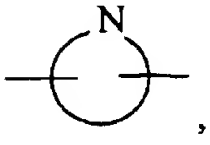
(vi) subjecting a compound of the formula:



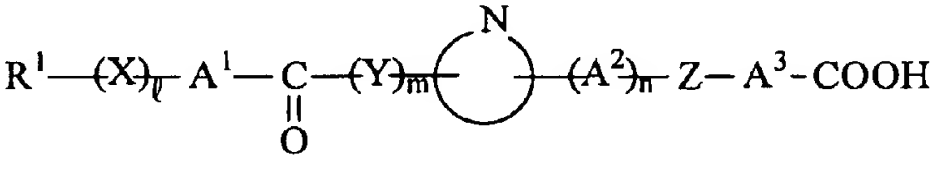
wherein R^2 A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, and R^1_b is a substituted or unsubstituted N-containing cycloalkyl,

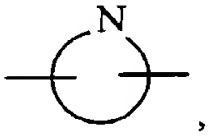
or a salt thereof, to protecting reaction of amino, to give a compound of the formula:

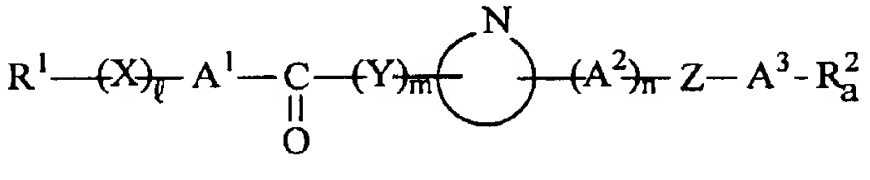


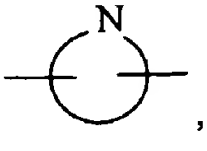
wherein R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, and R^1_a is a substituted or unsubstituted N-containing cycloalkyl having amino protecting group, or a salt thereof, or

(vii) subjecting a compound of the formula:

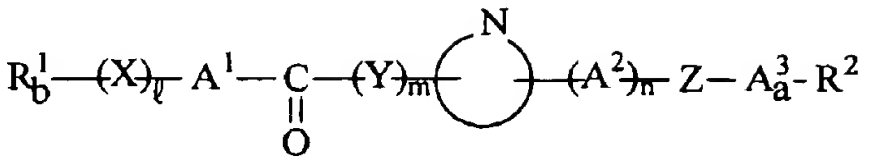


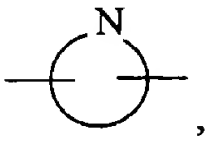
wherein R^1, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are each as defined above, or its reactive derivative at the carboxy group or a salt thereof, to protecting reaction of the carboxy, to give a compound of the formula:

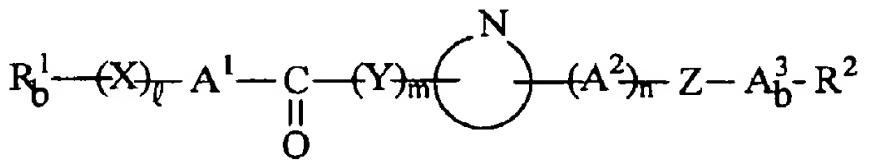


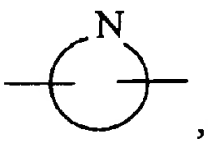
wherein R^1, A^1, A^2 A^3,  , X, Y, Z , ℓ, m and n are each as defined above, and R^2_a is a protected carboxy, or a salt thereof, or

(viii) subjecting a compound of the formula:

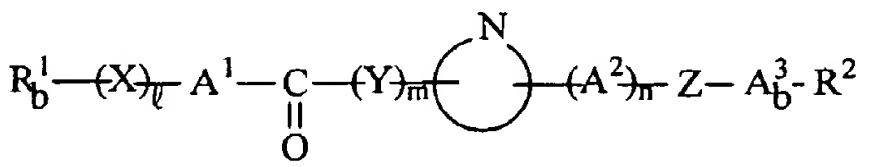


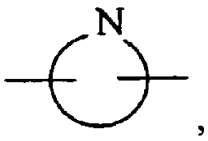
wherein R^1_b, R^2, A^1, A^2,  , X, Y, Z, ℓ, m and n are each as defined above, and A^3_a is lower alkylene having protected amino or a salt thereof, to elimination reaction of amino protective group, to give a compound of the formula:

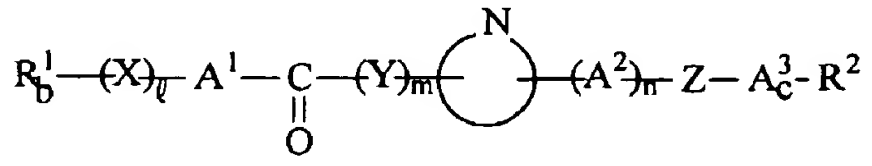


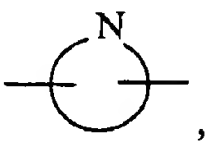
wherein R^1_b, R^2, A^1, A^2,  , X, Y, Z, ℓ, m and n are each as defined above, and A^3_b is a lower alkylene having an amino or a salt thereof, or

(ix) subjecting a compound of the formula:



wherein R^1_b, R^2, A^1, A^2,  , X, Y, Z, ℓ, m and n are each as defined above, and A^3_b is lower alkylene having amino, or a salt thereof, to acylation reaction of amino, to give a compound of formula:



wherein R^1_b, R^2, A^1, A^2, 

, X, Y, Z, ℓ, m and n are each as defined above, and A^3_c is lower alkylene having acylamino, or a salt thereof.

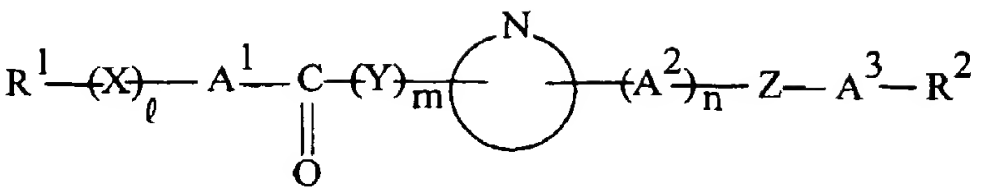
14. (Original) A pharmaceutical composition which comprises, as an active ingredient, a compound of claim 1 or a pharmaceutically acceptable salt thereof in admixture with pharmaceutically acceptable carriers or excipients.

15. (Canceled).

16. (Previously Presented) The compound of claim 1, or a pharmaceutically acceptable salt thereof, wherein said compound or pharmaceutically acceptable salt thereof is admixed with a pharmaceutically suitable carrier.

17. (Previously Presented) A method for the treatment of diseases caused by thrombus formation; restenosis or reocclusion; the thrombus formation in case of vascular surgery, valve replacement, extracorporeal circulation or transplantation; disseminated intravascular coagulation; thrombotic thrombocytopenic; essential thrombocytosis; inflammation; or for the adjuvant therapy with thrombolytic drug or anticoagulant; which comprises administering a compound of claim 1 or a pharmaceutically acceptable salt thereof to a human being or an animal.

18. (Previously Presented) A compound of the formula:



wherein:

R^1 is a 6-membered cyclo(lower)alkyl containing 1 to 3 nitrogen atoms which may have one or more amino protective groups;

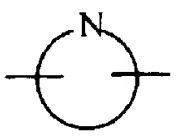
X is O, S or NH, and

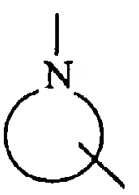
ℓ is an integer of either 0 or 1;

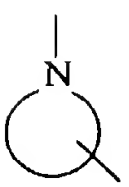
A^1 is a substituted or unsubstituted lower alkylene, a substituted or unsubstituted lower alkenylene or a substituted or unsubstituted lower alkanyl-ylidene;

Y is NH, and

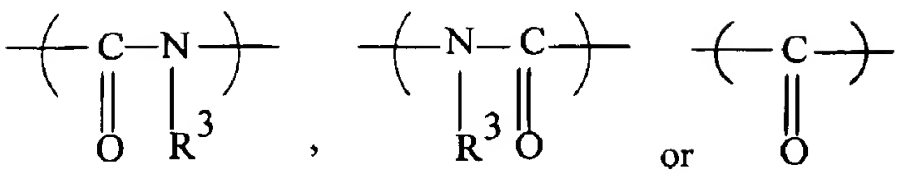
m is an integer of either 0 or 1;

 is a group of the formula:



wherein  is a substituted or unsubstituted 5 or 6-membered N-containing heterocyclic group containing 1 to 3 nitrogen atoms;

A^2 is a lower alkylene, and n is an integer of either 0 or 1;

Z is  or

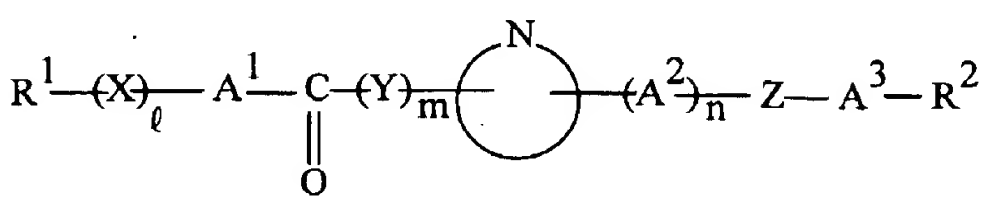
wherein R^3 is hydrogen or a lower alkyl;

A^3 is a substituted or unsubstituted lower alkylene;

and R^2 is a carboxy or a protected carboxy;

or a pharmaceutically acceptable salt thereof.

19. (Previously Presented): A compound comprising the following structure:



wherein R^1 is piperidyl, or piperidyl with one acyl;

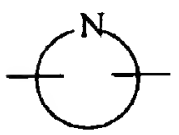
X is O, S or NH, and

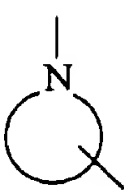
ℓ is an integer of 0;

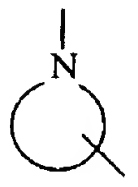
A^1 is ethylene;

Y is NH, and

m is an integer of 0;

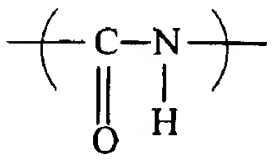
 is a group of the formula:



wherein  is piperidyl;

A^2 is a lower alkylene, and

n is an integer of 0;

Z is  ,

wherein R^3 is hydrogen or a lower alkyl;

A^3 is ethylene, trimethylene or tetramethylene, each of which has one substituent selected from the group consisting of aryl, aryl(lower)alkyl and a heterocyclic group; and

and R^2 is a carboxy or a protected carboxy;

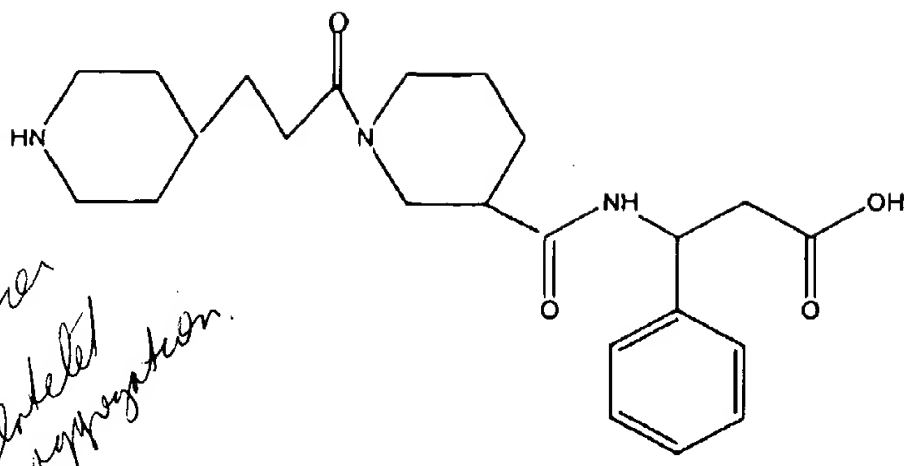
or a pharmaceutically acceptable salt thereof.

20. (Previously Presented): The compound of Claim 19, wherein

R^1 is 4-piperidyl; and

A^3 is ethylene, trimethylene or tetramethylene, each of which has one substituent selected from the group consisting of phenyl, pyridyl, and quinolyl.

21. (Previously Presented) The compound of Claim 20, which is N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidyl-carbonyl]-3-phenyl-β-alanine or its acid addition salt of a compound of the formula:



or its acid addition salt.

22. (Previously Presented) A method of producing a medicament, comprising mixing the compound of claim 1 or a pharmaceutically acceptable salt thereof with a pharmaceutically suitable carrier.

23. (Previously Presented) A method for the treatment of a disease caused by thrombus formation comprising administering to a patient in need thereof an effective amount of the compound of claim 1 or a pharmaceutically acceptable salt thereof .

24. (Previously Presented) The method of claim 23, wherein said disease caused by thrombus formation is restenosis or reocclusion; the thrombus formation in case of vascular surgery, valve replacement, extracorporeal circulation or transplantation; disseminated intravascular coagulation; thrombotic thrombocytopenic; essential thrombocytosis; or inflammation.

25. (Previously Presented) The compound of claim 16, wherein said compound is N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-β-alanine hydrochloride.

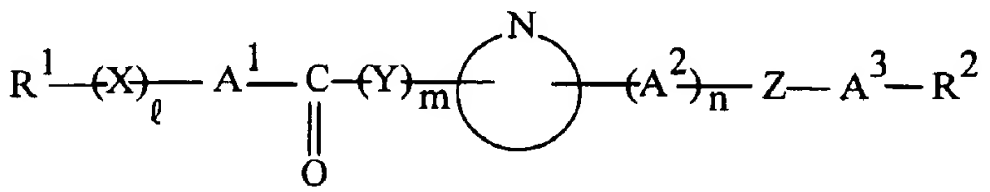
26. (Previously Presented) The method of claim 17, wherein said compound is N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-β-alanine hydrochloride.

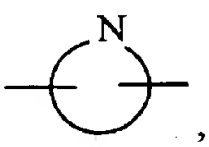
27. (Previously Presented) The method of claim 22, wherein said compound is N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-β-alanine hydrochloride.

28. (Previously Presented) The method of claim 23, wherein said compound is N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-β-alanine hydrochloride.

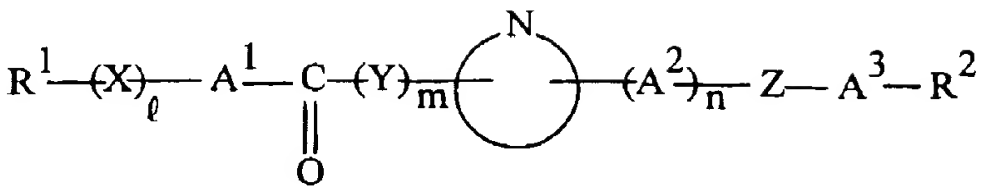
29. (Previously Presented) N-[(R)-1-{3-(4-piperidyl)propionyl}-3-piperidylcarbonyl]-β-alanine or its hydrochloride.

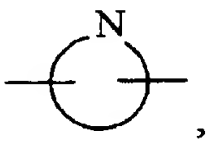
30. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



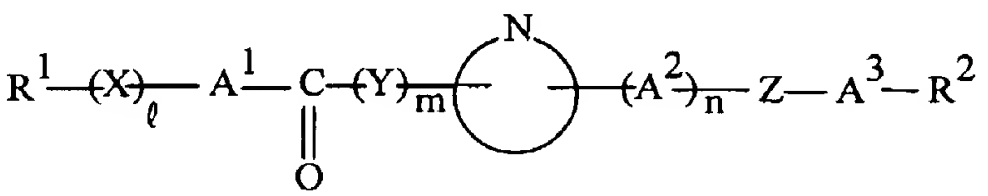
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (i) of claim 13.

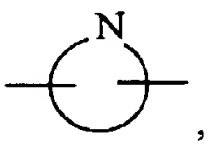
31. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



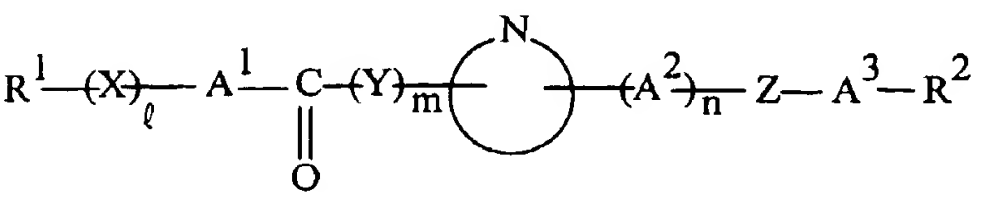
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (ii) of claim 13.

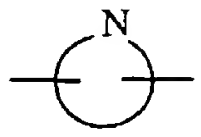
32. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



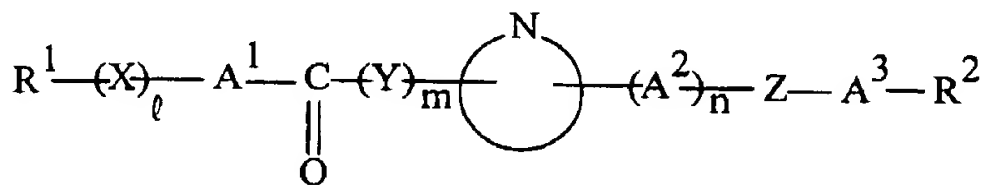
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (iii) of claim 13.

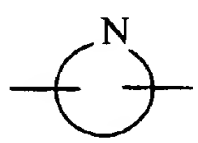
33. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



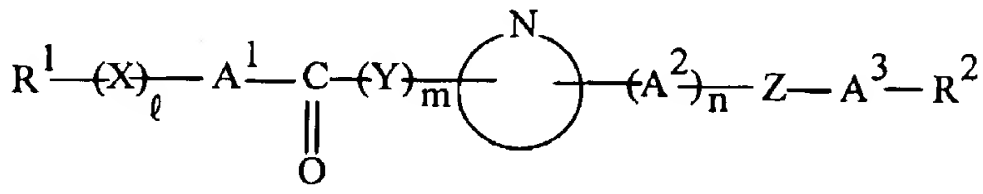
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (iv) of claim 13.

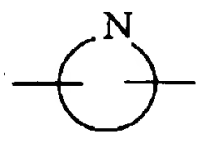
34. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



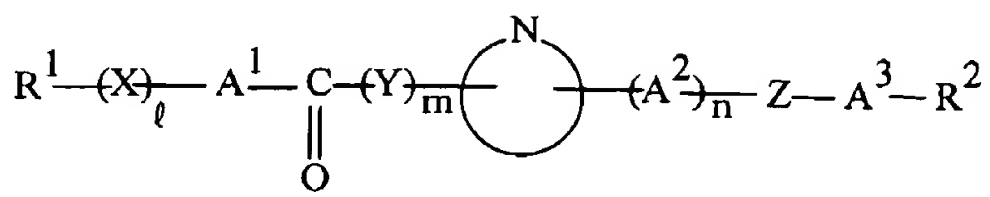
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (v) of claim 13.

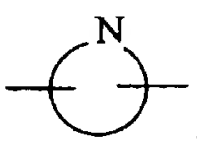
35. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



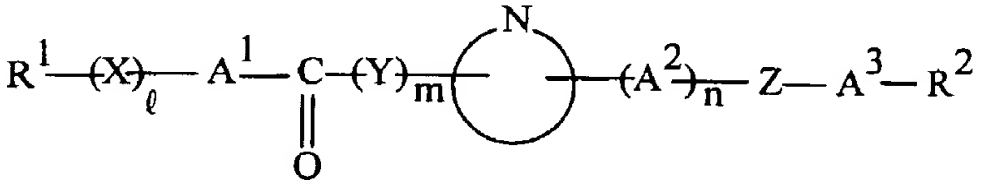
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (vi) of claim 13.

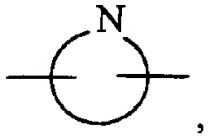
36. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



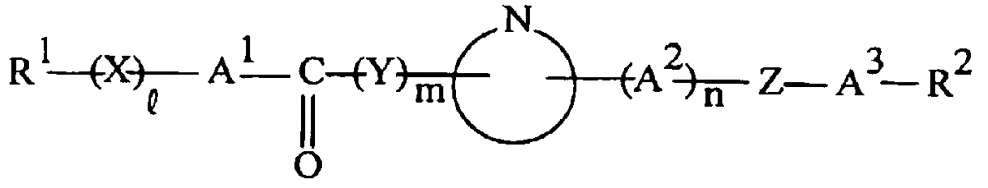
wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (vii) of claim 13.

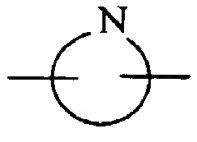
37. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (viii) of claim 13.

38. (Previously Presented) The process of claim 13 for preparing a compound of the formula:



wherein R^1, R^2, A^1, A^2, A^3,  , X, Y, Z, ℓ, m and n are as defined in claim 13, wherein said process comprises the process defined in section (ix) of claim 13.

39. (New) The compound of Claim 1, wherein said compound is isolated.

40. (New) The compound of Claim 1, wherein said compound is purified.

41. (New) The compound of Claim 1, wherein said compound is chemically synthesized.

42. (New) The compound of Claim 1, wherein R^1 is selected from the group consisting of azetidinyl, pyrrolidinyl, piperidyl, piperazinyl, morpholinyl, and quinolinyl.

43. (New) The process of Claim 13, wherein R^1 is selected from the group consisting of azetidinyl, pyrrolidinyl, piperidyl, piperazinyl, morpholinyl, and quinolinyl.

44. (New) The compound of Claim 18, wherein R^1 is selected from the group consisting of azetidinyl, pyrrolidinyl, piperidyl, piperazinyl, morpholinyl, and quinolinyl.

45. (New) The compound of Claim 18, wherein said compound is isolated.

46. (New) The compound of Claim 18, wherein said compound is purified.

47. (New) The compound of Claim 18, wherein said compound is chemically synthesized.